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(54) Title: BITS MAGAZINE FOR INTERCHANGEABLE TOOL BITS

(57) Abstract: A bit magazine for holding interchangeable tool bits, containing bit hold-
ers (2) within a housing (1) for storing and inserting/removing bits (11) using a magnetic
adapter (12), wherein the bit holders (2) comprise a stopper (6) for holding the bit (12)
and a pusher (7) at the bottom, along with a gripping mechanism (4, 5) for securing
the bit (12) and a button (3) for operating the gripping mechanism. At least three bit
holders (2) are arranged side by side in a straight line, with a stationary jaw (4) and
a movable jaw (5) placed crosswise through the bit holders (2), forming a variable-sized
opening in each holder, and where pressing the button (3) connected to the movable jaw
(5) engages the bit (11).

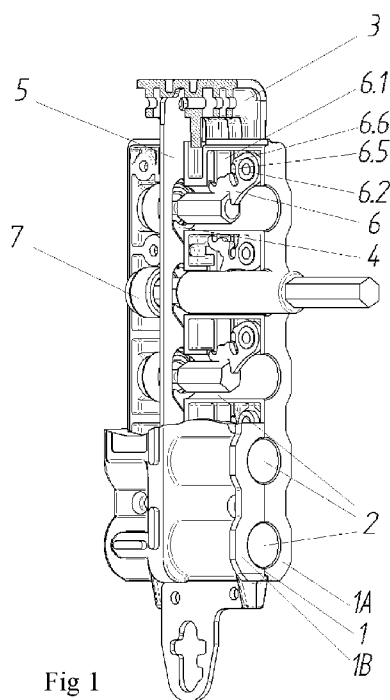


Fig 1

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- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

Bits magazine for interchangeable tool bits

Technical Field

The present invention relates to a device for storing and exchanging interchangeable tool bits, such as screwdriver or drill bits, preferably for cordless screwdrivers or cordless drills, equipped with a magnetic adapter.

Background Art

Known in the art is a tool bit holder made from elastic material (WO2005/072915, published on 11.08.2005), where bits can be individually separated for replacement for using with a (cordless) screwdriver.

The known storage devices for bits are designed solely for storing bits. To change a bit, the current bit attached to the tool (screwdriver) must be manually removed from the adapter and placed into the storage device. Then, a new bit is selected from the storage device and inserted into the adapter by hand.

Another known bits magazine (EP2301724, published on 30.03.2011) features a bit holder that receives the bit. The bit is guided into and out of the bit holder along one trajectory but is locked in place along another trajectory. The bit holder has a flexible and elastic lock or stopper. The magazine's parts are produced by extrusion or injection molding.

There is also a known bits magazine (EE P202000008, published on 15.12.2021) that contains a housing with multiple bit holders where bits are inserted. It features a bit grabbing button with a conical surface designed to operate the bit gripping mechanism. Inside the magazine housing is a bit stopper with a pusher for the stopper, a bit gripping mechanism, and a magnetic adapter for the bit. The bit holders are arranged in a circular pattern on the housing. The diameter of the lower part of the housing is larger than that of the upper part. When using this bit magazine, the magnetic adapter with the bit is inserted into an empty holder. By applying pressure to the bit grabbing button, the bit is gripped by the mechanism. When the magnetic adapter is pulled out of the holder, the bit remains in place. To retrieve a new bit from the magazine, an empty magnetic adapter is inserted into the required holder, and the bit is picked up by the magnet as the adapter is withdrawn.

This is considered the closest known solution. Its drawbacks include relatively large dimensions due to the gripping mechanism's construction, making one-handed operation difficult and using the storage during work inconvenient. The conical surface of the gripping button, which is linked to the gripping mechanism, presses the mechanism against the housing, preventing smooth movement.

Summary of the Invention

The aim of the presented invention is to provide a bits magazine for storing tool bits, such as screwdriver bits, free from the drawbacks described above.

The bits magazine, according to the invention, for holding interchangeable tool bits for a tool, includes bit holders inside the magazine housing for storing bits and inserting and removing them from the bit holders using a magnetic adapter. The bit holders contain a bit stopper for retaining the bit inside the holder and a pusher at the bottom of the holder, a gripping mechanism for gripping the bit, and a button to operate the gripping mechanism. At least three bit holders are arranged side by side in a straight line, and stationary and movable jaws of the gripping mechanism are placed crosswise through the bit holders inside the housing, with the stationary and movable jaws forming a variable-sized opening within each bit holder. Pressing the button connected to the movable jaw engages the bit, and releasing the button disengages it.

Preferably, the bit holder is adapted to hold hexagonal bits.

Preferably, the housing is equipped with a connecting element for connecting together at least two bit magazines. The connecting element may be detachable or integrated with the gripping button.

In one embodiment, the bit holders are arranged in at least two rows of three.

In another embodiment, the bits magazine includes labeling means on the housing near the bit holders.

The bit magazine, designed to store tool bits and to enable quick and convenient insertion and removal using a magnetic adapter on a tool, such as a drill or screwdriver, preferably a cordless screwdriver, eliminates the need for manual removal or insertion of bits into the tool adapter.

The bits magazine features bit holders inside the housing for storing bits and inserting and removing them using a magnetic adapter. The bit holders contain a stopper for securing the bit in place and a pusher at the bottom, with the stopper's pusher and the bit pusher being in different positions (compressed or free) depending on use. Optionally, the bit holders may have labeling means.

The construction of the bit magazine and the gripping mechanism/button ensures that it is easy to hold while pressing the gripping button with one hand, allowing for quick and simple bit changes.

List of drawings

Figure 1: A partially cutaway general view of the bit magazine according to the invention.

Figure 2: A view of the gripping set of the bit magazine.

Figure 3: A partially cutaway front view of the bit magazine.

Exemplary embodiment of the invention

The bit magazine for a tool is a device for inserting, storing, and removing bits, intended for use with interchangeable bits equipped with a magnetic adapter, such as a screwdriver, preferably a cordless screwdriver.

The tool's bit magazine comprises a housing 1, comprising two halves 1A and 1B, at least two bit holders 2 inside the housing, and a gripping button 3 connected to a movable jaw 5 of a pair of jaws 4, 5 inside the housing. The bit holders 2 are equipped with stoppers 6 to hold the bit 12 in place. The stoppers 6 allow bits to be freely inserted into the holders but prevent them from falling out. The stoppers 6 move into slots 6.1 in the housing, which include a spring recess 6.3 for the stopper's spring 6.4.

The movement of the stopper towards the bit holder is limited by a stopper limiter 6.5. A notch 6.6 on the back of the stopper catches on the limiter, preventing movement in an empty holder. A pusher 7 is located at the bottom of the bit holder 2, equipped with a spring 8. The spring is either compressed or in a free position depending on whether a bit 11 is present in the holder.

In this embodiment, five bit holders 2 are arranged in a single row. The design of the gripping pair 4, 5 depends on the arrangement of the bit holders. The stationary jaw of the gripping pair 4 is fixed to one half of the housing. The movable jaw is connected to the gripping button 3, and a spring 9 is placed between the button 3 and the housing 1.

The bit magazine is designed to work with a tool's magnetic adapter 12 and bit 11, where the magnetic adapter 12 holds the bit 11.

To insert a bit into the magazine, the magnetic adapter 12 with the bit 11 is placed into an empty bit holder 2. When the magnetic adapter 12 is inserted, the bit stopper 6 moves into its slot 6.1, compressing the stopper spring 6.4. When the magnetic adapter 12 reaches the bottom of the holder, the bit's hexagonal portion is within the working area of the gripping mechanism 4, 5. By pressing the gripping button 3, the movable jaw presses the bit 11 against the holder wall, allowing the magnetic adapter 12 to be removed.

When the magnetic adapter 12 is withdrawn and the gripping button 3 is released, the pusher spring 8 pushes the bit's hexagonal portion out of the working area of the gripping mechanism 4, 5, and the

bit 11 remains in the holder 2. The stopper spring 6.4 also returns to its free position, preventing the bit from falling out.

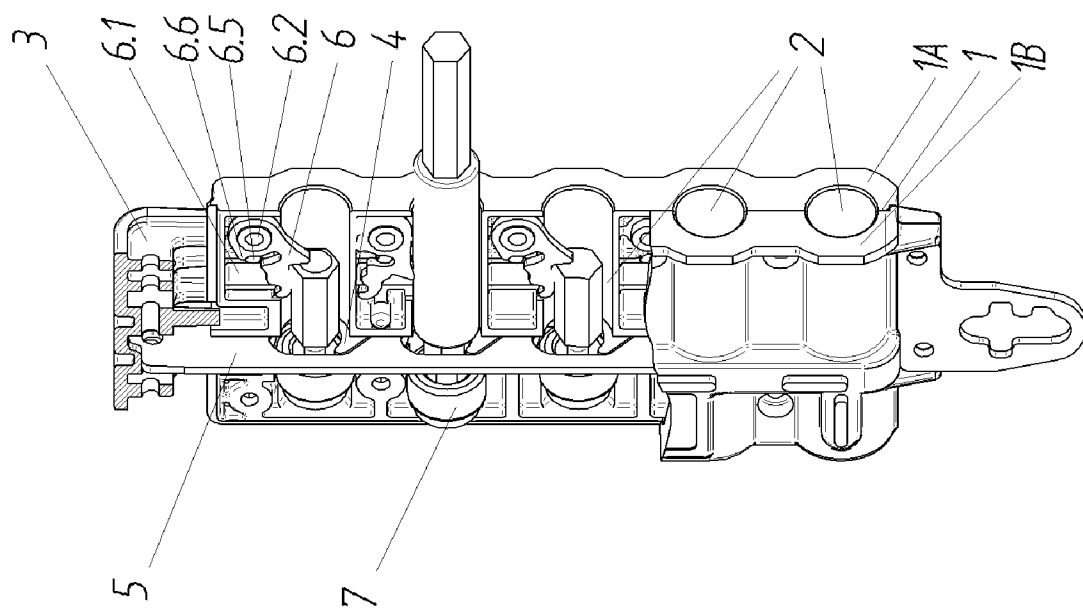
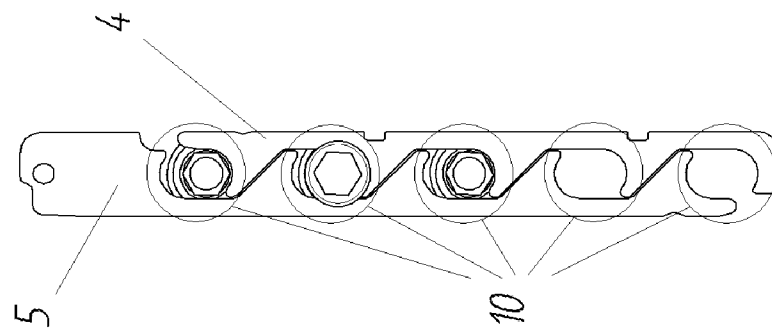
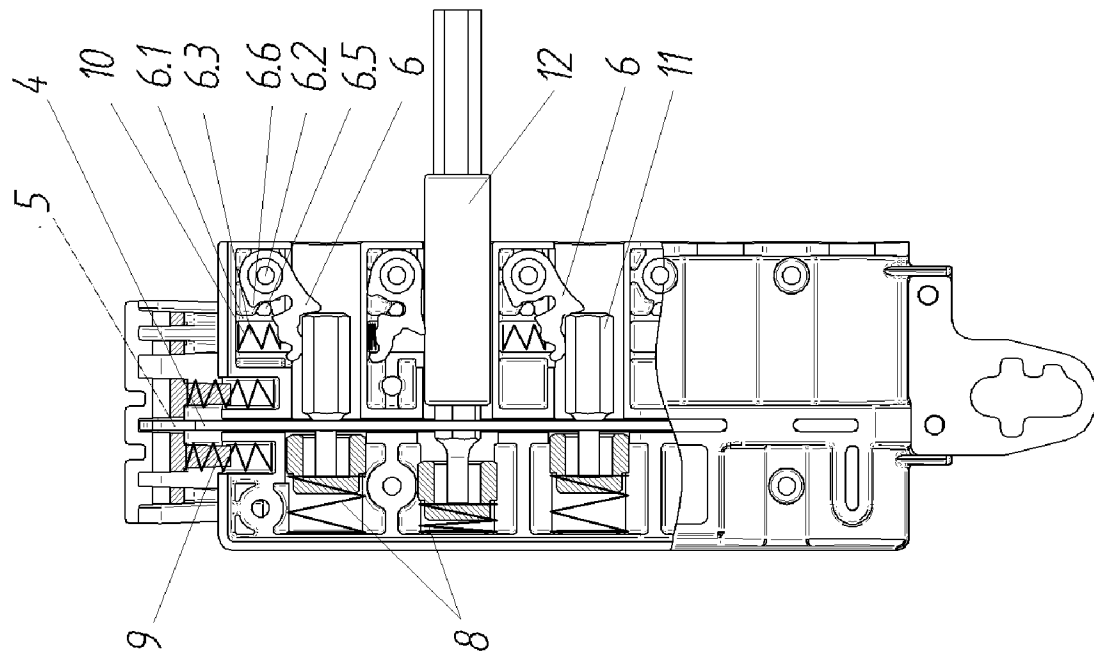
To retrieve a new bit 11, the magnetic adapter 12 is inserted into the holder 2, displacing the stopper 6. The hexagonal portion of the bit 11 is inserted into the magnetic adapter 12 and secured by the magnet. The bit 11 is then withdrawn along with the magnetic adapter 12. Bits in other holders remain locked by the stopper 6, so only the bit in the holder with the magnetic adapter 12 can be retrieved.

Reference Numbers of Parts:

- 1 – housing
- 10 1A – first half of the housing
- 1B – second half of the housing
- 2 – bit holder
- 3 – gripping button
- 4 – stationary jaw
- 15 5 – movable jaw
- 6 – stopper
- 6.1 – stopper slot
- 6.2 – stopper axis
- 6.3 – stopper spring recess
- 20 6.4 – stopper spring
- 6.5 – stopper limiter
- 6.6 – stopper notch
- 7 – bit pusher
- 8 – pusher spring
- 25 9 – button spring
- 10 – gripping mechanism openings
- 11 – (standard) screwdriver bit
- 12 – (standard) magnetic adapter

Patent Claims

1. A bit magazine for holding interchangeable tool bits, containing bit holders (2) within a housing (1) for storing and inserting/removing bits (11) using a magnetic adapter (12), wherein the bit holders (2) comprise a stopper (6) for holding the bit (12) and a pusher (7) at the bottom, along with a gripping mechanism (4, 5) for securing the bit (12) and a button (3) for operating the gripping mechanism, characterized by at least three bit holders (2) arranged side by side in a straight line, with the stationary and movable jaws (4, 5) placed crosswise through the bit holders (2), forming a variable-sized opening in each holder, and where pressing the button (3) connected to the movable jaw (5) engages the bit (11).
- 10 2. The bit magazine according to claim 1, characterized in that the bit holder (2) is adapted for holding a hexagonal bit.
3. The bit magazine according to claims 1 to 2, characterized in that the housing (1) is equipped with a connecting element for connecting at least two bit magazines together.
4. The bit magazine according to claim 3, characterized in that the connecting element is a
15 detachable connecting element.
5. The bit magazine according to claims 2 to 3, characterized in that the connecting element is integrated with the gripping button.
6. The bit magazine according to claim 1, characterized in that the bit holders are arranged in at least two rows.
- 20 7. The bit magazine according to claims 1 to 2, characterized in that the bit holders (2) have labeling means.



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2024/055845**A. CLASSIFICATION OF SUBJECT MATTER**

INV. B25H3/00

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B25H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EE 202 000 008 A (NELEPET OUE [EE]) 15 December 2021 (2021-12-15) cited in the application abstract figures 1,2A,2B -----	1 - 7
A	US 4 880 122 A (MARTINDELL J RICHARD [US]) 14 November 1989 (1989-11-14) column 4, line 47 - column 5, line 47 figure 1 -----	1 - 7
A	EP 2 578 363 A2 (IIE GMBH & CO KG [DE]) 10 April 2013 (2013-04-10) paragraph [0021] figures 1,2 ----- - / - -	1 - 7



Further documents are listed in the continuation of Box C.



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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/000902 A1 (KEIS ANDERS [DK] ET AL) 2 January 2003 (2003-01-02) paragraphs [0013], [0014] figure 1 -----	1 - 7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2024/055845

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